

LadHyX Seminar – October 14, 11:00, Amphi Lagarrigue

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Drops on swellable fibres

Fibrous materials are ubiquitous both in nature and industry reaching from bird feathers, to paper or eco-sourced construction materials. In many cases, individual fibres may swell if exposed to a favourable solvent. The swelling can lead to large scale deformations of the material. Through model experiments at the scale of one or two fibres we wish to understand the fundamental mechanisms behind those deformations. This talk will focus mainly on two apparently simple problems: first I will describe the absorption of a single drop on a stretched elastic fibre. Then we will discuss some interesting phenomena observed during the absorption of two neighbouring drops on the same fibre. In some configurations, an oversaturation of the fibre may lead to some fluid spontaneously escaping the fibre, leading to the formation of a third drop or causing peculiar movements of the initial drops. These observations are rationalized by a linear poroelastic model.